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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,504	12/12/2003	Norman Arnold Turnquist	129234-1	1902

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

SAVAGE, JASON L

ART UNIT PAPER NUMBER

1775

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/735,504

Applicant(s)

TURNQUIST ET AL.

Examiner

Jason L. Savage

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Reference number **40** described in paragraphs [0011] line, [0015] line 20 and [0016] line 2 is not shown in the figures.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

In figure 2, reference numbers **240**, **400** and **420** are not described in the specification

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 5,181,826) in view of Walden (US 6,089,825).

Rock teaches a turbine assembly comprising a shroud which provides a seal for minimizing leakage by controlling the blade tip clearance (col. 1, ln. 14-30). Rock further teaches that the shroud **46** is formed on a substantially circular casing **28** base component (col. 3, ln. 65-67). Rock further teaches that during operation of the engine the casing **28** will for a generally elliptical profile.

Rock is silent to providing the base layer with a coating which has the claimed thickness. Walden teaches a turbine assembly comprising a shroud substrate having a thermally sprayed abradable sealing layer formed thereon (col. 3, ln. 23-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the casing **28** in the assembly of Rock by applying the abradable seal of Walden.

The references are silent to the coating layer thickness varies as a function of the circumferential position along the inner surface of the base component. However, since the function has not been defined the function could be one which does not have any variation in the thickness or may be so small so as to be within normal tolerances for

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conventional coatings. As such, the coating of on the assembly of Rock as modified by Walden would meet the claim limitations.

Regarding claim 2, since the casing 28 forms a generally elliptical profile, the abradable seal coating formed thereon would also form a generally elliptical profile.

Regarding claims 3 and 20, Rock teaches the ellipse has a major axis running between top and bottom portions of the base component (Figure 2).

Regarding claims 4-5, Walden teaches the seal coating thickness is less than 0.635 mm (col. 5, ln. 41-54).

Regarding claims 7 and 23, Walden teaches the seal coating comprises a metal matrix and a secondary phase (col. 5, ln. 41-54).

Regarding claims 8 and 24, although the references do not recite that the metal matrix phase is selected from the claimed materials, MCrAl alloys are known to have desirable properties that make them particularly desirable for use in turbine components. It would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that alternate matrix materials could be employed as the metal matrix material in the abradable seal with a reasonable expectation of success.

Regarding claims 9, 11, 13, 25, 27 and 29, although the references do not recite the claimed secondary phase materials, it would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that alternate second phase materials could be added or substituted for the methyl methacrylate material with a reasonable expectation of success.

***Response to Arguments***

Applicant argues that Walden teaches a coating having a uniform thickness and that it would not have been obvious to one of ordinary skill in the art to have formed a coating having a non-uniform thickness. Upon review of Applicant's arguments the Examiner agrees that the formation of a coating having a non-uniform thickness would not be obvious in view of the cited references. However, the claims as presently stated do not require the formation of a coating having a non-uniform thickness. Furthermore, a uniform thickness coating such as that taught by Walden could read on the claim limitation that the coating layer thickness varies as a function of the circumferential position since the function could be one wherein there is no variation in the coating thickness. As such, the coating of on the assembly of Rock as modified by Walden would meet the claim limitations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason Savage  
9-27-06



JENNIFER C. MCNEIL  
SUPERVISORY PATENT EXAMINER

9/30/06